Title:

Preparation of supported ionic liquids as alternative adsorbents for cytostatic drugs

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Abstract:

Cancer prevalence is increasing at fast pace, with 18.1 million new cancer cases occurring in 2018 [1]. Advances in the pharma industry, particularly regarding cancer treatment, will boost survivorship and life quality of cancer patients. Within this framework, the consumption of anti-cancer drugs such as cytostatics is gaining momentum [2]. However, as with other active pharmaceutical ingredients, the excretion of cytostatics by urine represents a significant source of contamination in wastewater treatment plants (WWTPs), and consequently to the aquatic environment [3, 4].

Supported ionic liquids (SILs) can be envisaged as feasible tools to remove cytostatics from aqueous samples. In this work, several SILs using silica as the support material were synthesized and characterized. Their adsorption capacity for cyclophosphamide (model cytostatic drug) was then investigated by the determination of adsorption kinetics and isotherms. The modification of the ILs' cation structure significantly improves the removal of cyclophosphamide from aqueous samples, showcasing the potential of the prepared SILs as alternative adsorbents.

References:
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